

What is claimed is:

1. An objective lens for an optical recording/reproducing device which records/reproduces information to/from a recording medium utilizing holography, said objective lens converging a collimated beam in the vicinity of a recording surface of the recording medium to record/reproduce the information, said objective lens comprising a single lens element having an incident surface to which the collimated beam enters and an exit surface being opposite to said incident surface, said incident surface and said exit surface being configured to be rotationally symmetrical aspherical surfaces, at least within an effective diameter of said single lens element said incident surface and said exit surface being symmetrical with respect to a plane perpendicular to an optical axis of said single lens element and having the same shape, said single lens element having positive refractive power.

2. The objective lens according to claim 1,
wherein the rotationally symmetrical aspherical surface of each of said two refractive surfaces is expressed by a formula (1) below:

$$F(h) = \frac{h^2/r}{1 + \sqrt{1 - (1+K)\left(\frac{1}{r}\right)^2 h^2}} + A_4 h^4 + A_6 h^6 + A_8 h^8 + A_{10} h^{10} \dots (1)$$

where $F(h)$ is a sag amount (i.e., a distance from a plane, which is tangential to the rotationally symmetrical aspherical surface at the optical axis, to the rotationally symmetrical aspherical surface at a position whose height with respect to the optical axis is h), r is a radius of curvature of the rotationally symmetrical aspherical surface at the optical axis, K is a conical coefficient, and A_4 - A_{10} are fourth, sixth, eighth, and tenth order aspherical coefficients, respectively,

wherein a first derivative of the sag amount $F(h)$ with respect to h satisfies a condition (2) and a second derivative of the sag amount $F(h)$ with respect to h satisfies a condition (3):

$$-0.35 \leq dF(h)/dh \leq +0.35 \quad \dots (2)$$

$$+0.3 \leq d^2F(h)/d^2h \leq +1.3 \quad \dots (3).$$

3. The objective lens according to claim 2,
wherein said objective lens satisfies a condition (4):

$$0.9 \leq r/tc \leq 1.5 \quad \dots (4)$$

where r represents the radius of curvature on the optical axis, and tc represents a central lens thickness of said objective lens.

4. The objective lens according to claim 1,
wherein an image height y of an image formed by said

objective lens is defined by the following equation (5):

$$y = f \sin W \quad \dots (5)$$

where f represents a focal length of said objective lens and W represents a field angle,

wherein, with regard to each of a beam entering from said incident surface and a beam entering from said exit surface, an entrance pupil plane coincides with a front focal point and an image point coincides with a back focal point.

5. The objective lens according to claim 1,

wherein, with regard to each of a beam entering from said incident surface and a beam entering from said exit surface, said objective lens has wavefront aberration performance less than or equal to Marechal criterion within a maximum field angle range.

6. The objective lens according to claim 5,

wherein half of the maximum field angle is larger than or equal to 3° .